

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re patent application of  
Yoshiaki Umehara

Docket No. P27286

Serial No.: 09/695,874

Group Art Unit: No. 3683

Filed: October 26, 2000

Examiner: Burch, Melody M.

For: **CALIPER BODY AND METHOD OF MANUFACTURING CALIPER  
BODY OF VEHICULAR DISC BRAKE**

**REPLY BRIEF UNDER 37 C.F.R. § 41.41**

Sir:

Appellants are timely filing this Reply Brief in response to the Examiner's Answer dated March 21, 2006. Appellants are also requesting an oral hearing.

*The Claims are Directed to Structural Features  
(Not Method Features)*

At page 8 of the Examiner's Answer, the Examiner argues that the claims are directed to method steps, which should not be given patentable weight; that is, the claim is directed to

a sprue which is formed and a union hole formed from the sprue. The claim further states as functional language that the sprue is for molding. The recitations involving where and how the sprue is formed are directed to a method of production.

The Examiner further argued that the patentability of a product does not depend on its method of production; instead, when the product in the product by process claim is the same as or obvious from a prior art product, the claim is unpatentable even though the prior product was made by a different process. According to the Examiner, the JP '530 reference shows the same or obvious product as that recited in the claimed invention.

Appellants submit that the claim language is not directed to method steps; instead, the claims clearly are directed to and recite structure and structural features which are clearly patentable over the applied art of record. This is clear from the claim language, which specifically recites a sprue and a union hole formed from the sprue, as one example. For example, claim 6 recites, in part,

... a sprue which is formed at the bottom portion of said cylinder of the caliper body for molding the caliper body with a base material, wherein the caliper body is molded with a cavity disposed with a union hole formed from the sprue, while the side of molding said bottom portion of said cylinder is disposed in a vertically upper part of said cavity and also the side of molding said reaction pawl is disposed in a vertically lower part of said cavity ... (Emphasis added.)

Claim 19 recites, in part,

...a cavity disposed with a union hole formed from the sprue... (Emphasis added.)

Appellants submit that the use of the term "formed" is not used in the context of a method step. Instead, the term "formed" is used as a structural feature; that is, the term formed is a "noun" which, placed in context, is used as a structural feature.

Appellants direct the Board's attention to Merriam Webster's Collegiate Dictionary, 10<sup>th</sup> Edition, which defines "form" as

1a: the shape and structure of something as distinguished from its material ....

1a: to give a particular shape to....  
(Emphasis added.)

The language "form" and its variants used in the claimed invention, as shown above, clearly impart a structural feature, and not a method. Accordingly, Appellants respectfully submit that the Examiner has misinterpreted the language of the claims, that the claims should be given its ordinary meaning and that the

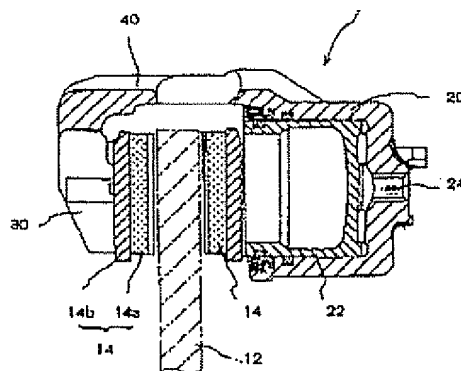
claims are clearly distinguishable over the applied art of record. As such, the terms of the claims should be given patentable weight.

The Examiner also argued that the limitation of claim 19 is a method limitation which should not be given any weight, e.g.,

“flange portion of the union hole is formed by processing the sprue after the casting.”

However, the Examiner again has failed to realize that these features impart structure. Also, the entirety of the claim should be considered; that is, claim 19, recites that the flange portion of the union hole is formed in the sprue. (See, Fig. 5 and page 14, lines 16-20.) Thus, read in context of the entire claim, the above terminology refers to structural features. Appellants also direct the Board’s attention to page 13, lines 17-19 and page 14, lines 16-20), for the features of the claimed invention. That is, these passages clearly describe that the structural feature of the union hole is formed from the sprue, again a structural feature.

Additionally, as clearly seen in the Figures, the structural features of the claimed invention are shown. For example, referring to Figure 4, reproduced below, the union hole 24 is shown formed in the sprue. Again, this is clearly a structural feature, and not a method feature. In fact, the method features are directed to the non-elected and canceled claims.



The Examiner has further noted that Appellants have elected the product claims over method claims set forth in a restriction requirement of September 16, 2004. The Examiner also suggested the examination of the method claims in a new application, in view of the Examiner's position. However, this is inconsequential to the present discussion. Appellants are aware of the restriction requirement and have specifically elected to have the apparatus claims examined. Appellants have apparently been unsuccessful in convincing the Examiner that the features recited in the pending claims are structural features, but now impart on the Board to reverse the Examiner and provide the claims with a proper interpretation of structure, which is clear from the record.

*Declaration of Mr. Ban has not been  
Afforded Proper Weight*

The Examiner has indicated that the declaration of Mr. Ban was thoroughly reviewed and that this declaration placed emphasis on the method of making the sprue. According to the Examiner, for this reason, the declaration of Mr. Ban does not provide adequate evidence to overcome the product claim. Additionally, the Examiner is of the opinion that the declaration of Mr. Ban does not adequately set forth any facts showing unexpected results. Instead, according to the Examiner, the declaration makes a "bald" conclusion<sup>1</sup>.

Appellants do not agree with the Examiner. Appellants are of the opinion that the Examiner still has not given proper deference to the declaration of Mr. Ban. Specifically, the declaration of Mr. Ban clearly notes the structural differences between the claimed invention and that of the applied art. Additionally, as discussed below, the declaration of Mr. Ban clearly and unequivocally declares and supports the fact that JP-835530 does not show a union hole formed in a sprue. In particular, Mr. Ban declared:

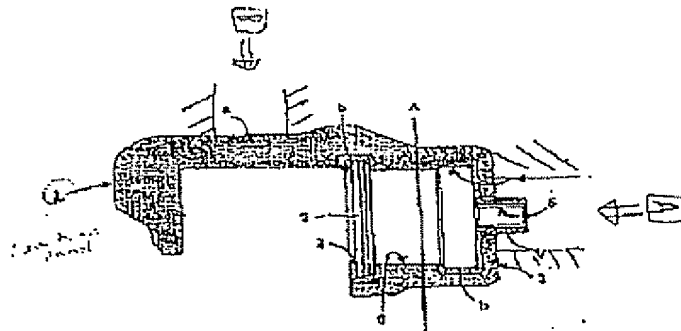
It is my expert opinion that one of ordinary skill in the art would recognize that JP8-35530 does not show that a flange portion of the union hole is formed by processing the

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<sup>1</sup> This refers to a conclusion which does not have any facts to support such a conclusion.

sprue after the casting. As JP8-35530 should be understood, it is simply impossible to use the inlet hole 5 of JP8-35530 as a sprue. In the case where the inlet hole 5 is utilized as a sprue and a molten metal is provided from the direction A..., the hole 5 would be closed. In order to prevent the hole from being closed, the molten metal must be provided from the B-direction at a place other than the hole 5. It would be impossible for the hole to be used as a sprue. (Emphasis added.)

These are not "bald" conclusions, nor are these arguments related to method steps. Instead, Mr. Ban clearly delineates the facts that JP8-35530 cannot use the inlet hole 5 of JP8-35530 as a sprue. In doing so, Mr. Ban notes that JP8-35530 cannot pour molten metal in the manner describe while achieving the claimed structure. Specifically, Mr. Ban notes that in the case where the inlet hole 5 is utilized as a sprue and a molten metal is provided from the direction A..., the hole 5 would be closed. It would then be impossible for the hole to be used as a sprue. This is shown in the figure reproduced below.



Thus, even if there were no conclusions as to unexpected results, it is still obvious and clear from the affidavit of Mr. Ban that the claimed invention is distinguishable over the applied references for other reasons, even stronger than secondary considerations.

Additionally, Appellants submit that the declaration of Mr. Ban was not given proper deference in accordance with MPEP 716.01(c) III, *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992)). By way of example, the Examiner does not provide any credible evidence to show that JP-835530 should

or could be interpreted any differently than the interpretation provided by Mr. Ban, an expert in the field. In fact, as previously argued by Appellants, the Examiner first accepted this declaration, as clearly seen in the office action dated October 19, 2004, i.e., by the fact that the Examiner had withdrawn all substantive rejections based on prior art in response to the filing of the declaration. However, in presenting this same rejection, again, the Examiner merely reiterates the same arguments of March 2, 2004, despite credible evidence to the contrary.

*Claimed Ranges*

The Examiner argues, with regard to the claimed ratios, that

where the general condition of a claim are disclosed in the art prior, it is not inventive to discover the optimum or workable ranges by routine experimentation.... the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.

The Examiner argues that JP '718 includes the general condition of the claim with respect to the volume ratios because it teaches optimizing volume ratios to avoid the production of sink marks during the molding process. The Examiner also maintains that JP '718 is relevant art (not non-analogous) since it is reasonably pertinent to the particular problem with which Appellants were concerned. Appellants respectfully do not agree with the Examiner.

First, Appellants stress that JP-1146718 does not show the ratios of the claimed invention, a critical flaw in the Examiner's rejection. For example, JP-H1-146718 refers to volume ratios, in general, of the mold opening and the like. This reference does not address any specific ratios, as recited in the claimed invention (which provides many advantages), and it also does not even address the same portions of the mold which are used by the claimed invention. Thus, the Examiner has failed to provide a prima facie case of obviousness, since features of the claimed invention are not even disclosed in the applied art.

Second, merely because JP-1146718 includes a general condition of the claims with respect to the volume ratios, this, in and of itself, does not render the claims obvious. In fact, since the "general condition" does not show in any specificity the recited claim elements, Appellants submit, again, that the Examiner has failed to provide a prima facie case of obviousness. Also, even if the JP-1146718 shows optimizing volume ratios to avoid the production of sink marks during the molding process, it certainly does not show these same conditions for the avoidance of sink marks in a metal casting. Instead, JP-1146718 is directed to resins, a material that would not be used in brake castings.

Third, Appellants submit that JP-H1-146718 does not teach or is even remotely related to caliper brakes or a material used for caliper brakes. Thus, there would be no motivation to combine JP-H1-146718 with any of the remaining references. In fact, as previously argued, JP-H1-146718 clearly falls into the nonanalogous art category in that it is directed to injection molding processes of resins, a material that would not be used for casting a caliper body of a vehicular disc brake. This is clearly evidenced in the Abstract of JP-H1-146718, which teaches storing data on compression pressure and variations of volume due to cooling temperature on a storage medium for injection compression processes (for plastic). Injection compression processes are used for plastics and resins, not for parts such as a caliper body of a vehicular disc brake.

Fourth, although JP-H1-146718 may be related to preventing sink marks, much different considerations are taken into account using the two very different moldings of the claimed invention and JP-H1-146718 (e.g., die casting and resin or plastic injection molding). For example, resins behave much differently than metals during molding processes. Also, in injection molding, there are many different methods used, none of which are used in metal casting, e.g., (i) high or low pressure gas assist injection molding or (iii) high or low pressure foam injection molding, all of which provide different features. As an illustration, gas

assisted pressure molding results in a hollow structure, whereas, foam injection molding results in a product with small gas bubbles therein. These techniques and the end results are contrary to that of gravity casting of products, as claimed. Also, since there are different considerations, there would, in turn, be different levels of optimization. For this reason, none of the general conditions shown in JP-1146718 render the specific ratios of the claimed invention obvious.

Fifth, Mr. Ban rebutted the use of JP-1146718, by declaring:

JP-H1-146718 would be used exclusively for resins for plastics. This would not be related to nor could it be modified for the use of casting automotive braking systems, for example. Said otherwise, this reference is directed to injection molding processes of resins, a material that would not be used for casting a caliper body of a vehicular disc brake. By way of illustration, the Abstract of JP-H1-146718 clearly teaches storing data on compression pressure and variations due to cooling temperature on a storage medium for injection compression processes for resins and plastics.

However, despite this expert opinion of Mr. Ban, the Examiner still maintains that it would be obvious to use the ratios of JP-1146718 to achieve the claimed invention, without providing clear rebuttal evidence to Mr. Ban's declaration. Accordingly, the declaration of Mr. Ban was not given proper deference in accordance with MPEP 716.01(c) III, *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992)). In fact, the Examiner already allowed this feature in the March 2, 2004 and October 19, 2004 office actions, but now reverts back to this rejection without providing any additional reasons for rejection.

Sixth, despite the Examiner's assertion to the contrary, the ratios recited by the claimed invention are not mere obvious design choices. It was with extensive experimentation, with results that were unexpected, that the inventors have concluded that such ratios are optimal for the invention. These ratios were proven, after exhaustive testing, to eliminate sink marks, and assist considerably in the proper flow and directional solidification of the molten through the complex part, as discussed on pages 20 and 21 of the disclosure. Accordingly, these



claimed ratios are not mere design choices, which would have been obvious to one of skill in the art.

Lastly, the claimed specific ratios provide a great advantage over prior art systems, e.g., with the use of the materials disclosed and recited, the brake caliper can be properly fitted to the wheel without having the bridge interfering with the wheel, while also ensuring proper strength and rigidity of the action portion. Also, the supply of the molten material from the central portion where the solidification is slow can be continued due to the step by step supply effect based on the ratio of volume. This contributes to the elimination or prevention of any sink marks produced in the reaction portion and the caliper body.

#### *Further Arguments*

The Examiner agreed that the correct position for the casting operations is not the same or similar to that of the symmetrical injection about the core. The Examiner further agreed that the correct core position for the casting operations does not necessarily coincide with the position in which the base material is injected in symmetry about the core; however, the Examiner argues that the WIPO 98/27353 shows the positions in figure 1. Appellants submit that the WIPO reference does not show a base material injected in symmetry about the core. The WIPO reference discloses that the core is in the correct portion for casting operations, which is not the same or similar to that of the symmetrical injection about the core, as claimed.

Appellants also reiterate that there would be no motivation to combine JP '718 with JP '530 and Ogino to achieve the claimed invention and that the Examiner is misapplying 35 U.S.C. §103(a) with regard to such combination. In particular, Appellants again direct the Board's attention to the arguments set forth on page 10, 3<sup>rd</sup> paragraph to page 11, line 2, of the amendment filed on July 8, 2003. Also, there would be no reasonable expectation of success using the combination of JP-835530 and Ogino. Additionally, gravity casting method would not be able to form interspersed materials (a) and (b) (see Figures 2 and 3 of

JP8-35530), in addition to the material (b) for the seal 3, bottom part 4 and inlet 5. Instead, it would appear that the JP8-35530 uses a high pressure or press fit method in order to form the different components of at least the seal 3, bottom part 4 and the inlet 5 of the light metal matrix (b). Of course, then, the combination of JP8-35530 and Ogino would not result in the claimed invention.

The Examiner still fails to consider all of the features of claim 22.

### CONCLUSION

In summary, the references applied by the Examiner, alone or in any combination, fail to teach or suggest the features of the claimed inventions. Therefore, the references do not provide evidence that would support a conclusion of obviousness under 35 U.S.C. §103(a). Appellants thus respectfully submit that the rejections of claims 6-11, 13-16 and 18-27 are in error and that reversal is warranted in this case.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Andrew M. Calderon', with a stylized flourish at the end.

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